

Related Pending Application
Related Case Serial No: <u>09/828,827</u>
Related Case Filing Date: <u>04-10-01</u>

What is claimed is:

1. An arrayed waveguide grating in which a plurality of optical signals with varying wavelengths which are inputted from optical input waveguides are propagated while the signals are provided with phase differences for each wavelength by arrayed waveguides, and made incident onto different optical output waveguides for each wavelength, and light beams with varying wavelengths are outputted from the different optical output waveguides, comprising:

one or more of the optical input waveguides disposed in parallel;

a first slab waveguide connected to the exit side of said optical input waveguides;

the plurality of arrayed waveguides, which are disposed in parallel, and have lengths different from each other to propagate light led out from said first slab waveguide, and are connected to the exit side of said first slab waveguide;

a second slab waveguide connected to the exit side of said plurality of arrayed waveguides; and

the plurality of optical output waveguides disposed in parallel and connected to the exit side of said second slab waveguide, wherein

the standard deviation of the phase error distribution

occurring within the plurality of arrayed waveguides is suppressed to 0.6rad or less.

2. An arrayed waveguide grating as set forth in Claim 1, wherein the standard deviation of the amount of fluctuation in the refractive index of a core comprising the plurality of arrayed waveguides is suppressed to  $4.84 \times 10^{-6}$  or less.

3. An arrayed waveguide grating as set forth in Claim 1 or 2, wherein a core comprising the arrayed waveguides is formed by means of flame hydrolysis deposition, and the number of deposited layers of said core is set to 13 or more.